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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,889	09/19/2003	Daniel J. Gregoire	HRL025-DIV	6992
28848	7590	12/06/2006	EXAMINER	
TOPE-MCKAY & ASSOCIATES 23852 PACIFIC COAST HIGHWAY #311 MALIBU, CA 90265			BUEKER, RICHARD R	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 12/06/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,889

Applicant(s)

GREGOIRE ET AL.

Examiner

Richard Bueker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

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Claims 2-6 and 8-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 15 and 16, the phrase "wherein the container is positioned in the path of the oxygen plasma" does not appear to be supported by the specification as originally filed.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-8 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung I (5,198,677) taken in view of Kaufman (4,481,062) and Leung II (5,587,226). Leung I (5,198,677) discloses an ion source (Fig. 1) including a plasma generating chamber, magnets arranged around the chamber, a tungsten filament that is heated by a filament power source, a gas port, a bias DC power source, and an array of magnets at the exit of the chamber that act as a magnetic filter of the type claimed by applicants. Leung I teaches that his magnetic filter design desirably produces a stream of mainly atomic ions. Leung's ion source also includes a cooling channel formed between a plasma generation chamber and a cylindrical wall for cooling magnets in the channel; and a liner made of a high-temperature resistant material such as molybdenum provided within the chamber (column 3, line 10 through column 4, line 10). Leung I

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uses a DC power source 58 to heat the tungsten filament and does not discuss the use of an AC power source to heat his tungsten filament. Also, Leung I does not discuss using his ion source to generate atomic oxygen ions. Kaufman (see Fig. 1 and col. 5, lines 1-6) teaches that either an AC or DC power source can be used to heat a tungsten filament to thermionic temperatures. It would have been prima facie obvious to one skilled in the art to modify the ion source of Leung I (5,198,677) by substituting an AC power source for Leung's DC power source 58, because Kaufman teaches that an AC power source was known to be a functional equivalent power source for heating a tungsten filament to thermionic temperatures. Regarding the production of atomic oxygen ions, Leung II (5,587,226) teaches (see the entire patent and in particular col. 13, lines 7-29 and col. 15, lines 13-41) that it is desirable to produce a stream of atomic oxygen ions for materials processing, and Leung II (5,587,226) also teaches that a magnetic filter of the type used by Leung I will produce such a stream of atomic oxygen ions. Therefore, it would have been obvious to one skilled in the art to use the atomic ion source of Leung I (5,198,677) to produce the desired atomic oxygen ions by providing the Lueng I ion source with a source of oxygen as presently claimed. Leung II also teaches (see col. 15, lines 15-41) that his antenna ion source is more desirable for oxygen ion production than a DC discharge ion source of the type disclosed by Leung I. It is noted, however, that a non-preferred embodiment disclosed in the prior art can properly be used as a prior art teaching. The use of a non-preferred embodiment would have been obvious to one willing to accept the drawbacks taught. See In re Boe, 148 USPQ 507; In re Mills, 176 USPQ 196 and In re Susi 169 USPQ 423.

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Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung I (5,198,677) taken in view of Kaufman (4,481,062) and Leung II (5,587,226) for the reasons stated in the rejection of claim 1 above, and taken in further view of Anderson (US Patent No. 5,365,070). Anderson teaches an ion source 10 (Fig. 1) including a magnetic holding metal member 12 made of carbon steel which has high magnetic permeability so that magnetic field can easily penetrate there through (column 5, line 47 through column 6, line 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize carbon steel in the construction of chamber having magnets there around so that magnetic field more efficiently penetrate there through.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leung I (5,198,677) taken in view of Kaufman (4,481,062) and Leung II (5,587,226) for the reasons stated in the rejection of claim 1 above, and taken in further view of Mantei (US Patent No. 4,483,737). Mantei teaches a plasma chamber 10 (Figs. 1, 2) including a filament 21 therein and having a plurality of magnets 14 surrounding the chamber wherein the plasma chamber 10 is made of a nonmagnetic material such as stainless steel (column 4, lines 29-56). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize nonmagnetic stainless steel as a suitable material for a plasma chamber such as in Leung I.

Regarding the new matter rejection, applicants have argued that an unidentified item in Figs. 1 and 2 is a container, and this unidentified item provides support for the added claim language of "wherein the container is positioned in the path of the oxygen

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plasma". The dictionary definition of "container" is attached. A container is a receptacle such as a box, crate, can, jar, etc. The word "contain" means "to have within" and implies the actual presence of a specified substance or quantity within something". It is noted, however, that there is nothing in applicants' specification as originally filed that would have indicated that the unidentified item in Figs. 1 and 2 is a container according to the standard definition of the word. The unidentified item is not a receptacle that has the diamond sample contained within it. Based on what is shown in applicants' Fig. 5, it appears that the unidentified item in Figs. 1 and 2 may have been intended to represent the main body of the diamond sample, with a rough upper surface as discussed on pages 1 and 2 of applicants' specification. It is noted that in applicants' specification at page 8, lines 9 and 10, the numeral 130 is used to describe only the diamond surface(s). The vacuum chamber 200 illustrated in Fig. 2 is the only container described in applicants' specification as originally filed that could be considered "a container for placing at least one diamond sample" as recited in claims 15 and 16, but the container 200 does not appear to support the claim language of "wherein the container is positioned in the path of the oxygen plasma". It is noted also that the apparatus of Leung I includes a vacuum chamber 43 that corresponds to applicants' vacuum chamber 200.

The case law cited by applicants relating to enablement is not pertinent to the issue of new matter.

Applicants have argued that Leung I, Kaufman and Leung II do not solve the problem of diamond polishing. It is noted, however, that diamond polishing is a

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recitation of intended use of the claimed apparatus, and the claimed apparatus is not so limited. There is no actual requirement that the presently claimed apparatus ever be used for polishing diamonds.

It has been held that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (*In re Danley*, 120 USPQ 528, 531). Apparatus claims cover what a device is, not what a device does (*Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525). Also, a claim containing a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art teaches all the structural limitations of the claim (*Ex parte Masham*, 2 USPQ2d 1647). Also see MPEP 2114.

Regarding the claim 1 limitation of "wherein the filtration magnets pass the oxygen plasma to the plasma source exit and prevent the primary electrons from entering the downstream region of the reaction chamber" (see claim 1, lines 25-27), it is noted that both Leung I (see col. 3, lines 40-46) and Leung II (see col. 13, lines 20-29) teach that their respective apparatus accomplish this step. Both of Leung I and Leung II teach that while energetic primary electrons are blocked by the magnetic filter, plasma passes the filter and that plasma passes into the extraction region. This is all that is required by the above quoted claim 1 limitation. It is noted that "the downstream region" recited in line 25 and line 27 of claim 1 is equivalent to "the extraction region" of Leung I and II.

Regarding the limitation of claims 15 and 16 of “a container for placing at least one diamond sample”, this limitation is a recitation of intended use that does not require the presence of a diamond sample. Regarding the limitation of claims 15 and 16 of “wherein the container is positioned in the path of the oxygen plasma”, this is also a recitation of intended use.

Applicants have argued that Leung I, Kaufman and Leung II do not disclose or suggest forming the electron source of iridium as recited in claims 2 and 8. It is noted, however, that claims 2 and 8 recite that “the electron source filament is formed of a material selected from the group consisting of tungsten, tantalum or iridium”, and this limitation is met by the filaments of Leung I (col. 4, lines 1-6) and Kaufman (col. 5, lines 1-3).

Applicants have argued that Leung I, Kaufman and Leung II do not disclose or suggest the limitations of claims 4-6. It is noted that the limitations of claims 4-6 are process-type limitations that do not so limit the present apparatus claims. These limitations are in effect recitations of intended use that the Leung I apparatus is inherently capable of practicing.

The recitation of a particular method of use does not limit an apparatus claim, see *In re Casey*, 152 USPQ 235; *In re Rishoi*, 94 USPQ 71; *In re Young*, 25 USPQ 69; *In re Dulberg*, 129 USPQ 348; *Ex parte Thibault*, 64 USPQ 666; and *Ex parte Masham*, 2 USPQ2d 1647.

Regarding claim 4, Leung I (see col. 2, lines 13-50) teaches that his magnet filter means produces 98% atomic ions, and Leung II (see col. 13, lines 10-29) makes clear

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that a magnetic filter apparatus of the type taught by Leung I can also produce 93% atomic oxygen ions. Therefore, Leung's apparatus is inherently capable of producing the 60% atomic oxygen ions referred to in claim 4.

Regarding the claim 5 limitation of a discharge voltage between 50 and 150 volts, Leung (col. 5, lines 35-40) discloses the use of a discharge voltage of 80 volts, and therefore the Leung I apparatus has an inherent capability of operating with a voltage in the claimed range.

Regarding the claim 6 limitation of a pressure of between 6.0×10^{-5} and 1.2×10^{-4} torr., it is noted that Leung I discloses at col. 5, lines 40-45 that the vacuum pump of his apparatus is capable of operating in the 3×10^{-4} torr. pressure range. Therefore, it would be expected that his apparatus would be capable of also operating at 1.2×10^{-4} torr. It is again noted that a recitation of intended use does not require an apparatus to be operated in the recited manner, but only requires that the apparatus have an inherent capability of being operated according to the recited manner.

Regarding claim 10, applicants have argued that the stainless steel of Mantei is for a plasma chamber rather than a cooling chamber. It is noted, however, that Leung teaches the use of a non-magnetic material such as aluminum as the material of construction of the magnet cooling jacket. Mantei teaches that aluminum and stainless steel are known in the prior art as alternative materials of construction for non-magnetic structural parts. Therefore, it would have been prima facie obvious to use stainless steel, which is a well-known alternative non-magnetic material of construction, for forming the non-magnetic cooling jacket of Leung.

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In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Bueker
Primary Examiner
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